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EXAMINER	
SAIDHA, TEKCHAND	
ART UNIT	**PAPER NUMBER**
1652	

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Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

Office Action Summary	**Application No.** 10/684,190	**Applicant(s)** LIU ET AL.	
	Examiner Tekchand Saidha	**Art Unit** 1652	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *oral election on January 3, 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-23* is/are pending in the application.

4a) Of the above claim(s) *1-7 and 12-23* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *8,10 and 11* is/are rejected.

7)☒ Claim(s) *9* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *10 October 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)
2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3)☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 1/12/04, 5/25/05 & 8/30/05

4)☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ .
5)☐ Notice of Informal Patent Application (PTO-152)
6)☐ Other: _____.

Detailed Action

1. The following restriction requirement is made prior to this FOAM.

Election/Restrictions

2. Restriction to one of the following inventions is required under 35 U.S.C. 121:

Group 1, claim(s) 1-2, 4-7 & 14, drawn to isolated polynucleotide of SEQ ID NO: 1 encoding human protein kinase 3P23 of SEQ ID NO: 2, classified in class 435, subclass 252.3.

Group 2, claim(s) 3, drawn to isolated polynucleotide of SEQ ID NO: 3 [220,860 nucleotides in length], classified in class 536, subclass 23.2.

Group 3, claim(s) 8-11, drawn to isolated polypeptide of SEQ ID NO: 2, classified in class 435, subclass 194.

Group 4, claim(s) 12-13, drawn to antibody to SEQ ID NO: 2, classified in class 530, subclass 387.1.

Group 5, claim(s) 15-16, drawn to a transgenic non-human animal comprising the polynucleotide of SEQ ID NO: 1, classified in class 800, subclass 8.

Group 6, claim(s) 17, drawn to a method of identifying an agent capable of binding HPK3P23 kinase, classified in class 435, subclass 4.

Group 7, claim(s) 18-19, drawn to a method of identifying an agent capable of modulating the level of activity of HPK3P23 kinase, classified in class 435, subclass 69.2.

Group 8, claim(s) 20, drawn to a method of preventing or treating an HPK3P23-related disease in a subject using composition of claim 19, classified in class 435, subclass 15.

Group 9, claim(s) 21-23, drawn to a polynucleotide capable of inhibiting HPK3P23 gene expression by RNA interference [Table 4], classified in class 536, subclass 23.1.

3. The inventions are distinct, each from the other because of the following reasons:

4. The DNA encoding the human protein kinase 3P23 Group I and human protein kinase 3P23 of Group I are chemically and biologically distinct molecules. The enzyme and DNA have fundamentally different molecular structure, each with its own set of functionality. Enzyme, for example is biologically active, whereas DNA encoding the enzyme, is not. Additionally, the DNA constitutes the genetic material and is composed of the genes, and has other functions besides encoding the enzyme. Since the enzyme and the DNA are biologically and chemically distinct, the manner of using the DNA may not necessarily involve the enzyme. At the minimum, the enzyme can be used to delineate molecular weight parameters in protein gel electrophoresis whereas the DNA can be used in hybridization protocols.

5. The DNA of Invention I and the DNA of Invention III have differing structure encoding protein of varying size and activity. Therefore, these products are patentably distinct from each other. Similarly the DNA of Invention IX is distinct from the Inventions of I or II.

6. Inventions I and IV or II and IV are patentably distinct from each other. The nucleic acids, vectors, of Group I or II and the antibodies and methods of Group IV do not require each other for their practice; have separate utilities, such as use of nucleic acids, cells, and methods to recombinantly produce protein versus use of the antibodies to detect proteins; are physically, chemically and biologically different from each other; and are subject to separate manufacture and sale from each other. These groups have acquired separate status in the art and separate fields of search as further evidenced by their separate classification.

7. Inventions of Group III and IV are distinct because protein and antibody are chemically and biologically distinct molecules. Antibody and protein have fundamentally different molecular structure, each with its own set of functionality. Antibodies, for example, are formed in the B-cells and are useful for binding to particular residues. Proteins do not function to bind in the particular immunological way that antibodies do, and therefore have different specificities for different substrates, and do not purport to have the kinds of specific activity that antibodies have.

8. The DNA of group I or II is related to the method of using the protein of group VI-VIII by virtue of the fact that the protein is encoded by the DNA. The inventions are distinct, however because the DNA is not used in the method of identifying binding or modulating enzyme activity and is not used in the method of treating HPK3P23 related disease(s). Therefore, the inventions are distinct.

9. Inventions III and VI or III and VII are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product (M.P.E.P. § 806.05(h)). In the instant case the HPK3P23, as claimed in Group III, can be used in a materially different process other than the methods of Groups VI or VII, such as use of the HPK3P23 in a method to produce antibodies to the enzyme.

10. The DNA of group I is related to the transgenic non-human animal of group V by virtue of the fact that the transgenic non-human animal contains DNA of group I. The inventions are distinct, however, because transgenic non-

human animal comprises more than the isolated DNA of group I. Therefore, the inventions are distinct.

11. The polynucleotide of Group IX which is capable of inhibiting HPK3P23 gene expression by RNA interference, is not used in the method(s) of Group VI-VIII, and is structurally distinct from the products of Groups I-IV.

12. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

13. During a telephone conversation with Brian A Fairchild on January 3, 2006, a provisional election was made without traverse to prosecute the invention of Group III, claims 8-11. Affirmation of this election must be made by applicant in replying to this Office action. Claims 1-7 & 12-23 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

14. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

15. The examiner has required restriction between product and process claims. Where applicant elects claims directed to the product, and a product claim is subsequently found allowable, withdrawn process claims that depend from or otherwise include all the limitations of the allowable product claim will be rejoined in accordance with the provisions of MPEP § 821.04. Process claims that depend from or otherwise include all the limitations of the patentable

product will be entered as a matter of right if the amendment is presented prior to final rejection or allowance, whichever is earlier. Amendments submitted after final rejection are governed by 37 CFR 1.116; amendments submitted after allowance are governed by 37 CFR 1.312.

16. Claims 8-11 are under consideration in this examination.

17. ***Priority***

Applicant' s claim for domestic priority under 35 U.S.C. 119(e), filed 10 October 2000, is acknowledged.

18. ***Sequence Rules***

The instant specification, Figures 1, 2, 3 & 4, present amino acid sequences that are encompassed by the definitions for nucleotide and/or amino acid sequences set forth in 37 CFR 1.821(a)(1) and (a)(2), but fails to comply with the requirements. According to 37 CFR 1.821-825, every disclosed amino acid sequence of four or more residues or 10 or more nucleotides must be identified by a SEQ ID NO. The amino acid sequences presented do not have SEQ ID Nos. In order to comply with the sequence rules Applicants must identify these sequences by providing SEQ ID NO:?, and where required provide a new version of the sequence listing and disk.

If the sequences are already present in the sequence listing, SEQ ID Nos. corresponding the appropriate figures may be included in the figure legends.

19. ***Specification***

The specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

20. ***35 U.S.C. § 112, first paragraph (Written Description)***

Claims 8 & 10-11 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention. Claims 8 & 10-11, recite ' an isolated polypeptide comprising a fragment of SEQ ID NO: 2, wherein the fragment is at least 500 consecutive amino acids residues of SEQ ID NO: 2' (claim 8); or wherein the polypeptide comprises a variant of a fragment of SEQ ID NO: 2 (claim 10); or wherein the variant and said fragment have at least 95% identity [to the amino acid sequence of SEQ ID NO: 2]. The modified polypeptides recite no function.

The specification, however, only provides a single representative species from Human protein kinase (HPK) 3P23 [HPK3P23] of SEQ ID NO: 2. There is no disclosure of any particular structure to function/activity relationship in the single disclosed species to other species where such sequences are conserved in order to establish a relationship among species or modify the polypeptide by substitution, addition, deletion and/or insertion in order to make a polypeptide at least 95% identical to SEQ ID NO: 2 and retain kinase activity; or to modify the polypeptide of SEQ ID NO: 2 and obtain variants and 500 consecutive amino acid fragments of SEQ ID NO: 2 and still retain the kinase activity. The specification also fails to describe additional representative species of SEQ ID NO: 2 by any identifying structural/functional characteristics other than the polypeptide/variant language recited in claims, for which no predictability of structure/function is apparent. Given this lack of additional representative species, such as the modifications of at least 5% of the amino acid residues of SEQ ID NO: 2; or wherein the fragment is at least 500 consecutive amino acids residues of SEQ ID NO: 2, or wherein the polypeptide comprises a variant of a fragment of SEQ ID NO: 2 with associated activity, Applicants have failed to sufficiently describe the claimed invention, in such full, clear, concise, and exact terms that a skilled artisan would recognize Applicants were in possession of the claimed invention.

Therefore, the written description requirement is not satisfied.

21. Claims 8 & 10-11 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for an isolated human protein kinase (HPK) 3P23 [HPK3P23] of SEQ ID NO: 2, does not reasonably provide enablement for an isolated polypeptide comprising a fragment of SEQ ID NO: 2, wherein the fragment is at least 500 consecutive amino acids residues of SEQ ID NO: 2 (claim 8); or wherein the polypeptide comprises a variant of a fragment of SEQ ID NO: 2 (claim 10); or wherein the variant and said fragment have at least 95% identity [to the amino acid sequence of SEQ ID NO: 2]. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make the invention commensurate in scope with these claims.

The scope of the claims is not commensurate with the enablement provided by the disclosure with regard to the extremely large number of human protein kinases broadly encompassed by the claims. Since the amino acid sequence of a protein determines its structural and functional properties, predictability of which changes can be tolerated in a protein's amino acid sequence and obtain the desired activity requires a knowledge of and guidance with regard to which amino acids in the protein's sequence, if any, are tolerant of modification and which are conserved (i.e. expectedly intolerant to modification), and detailed knowledge of the ways in which the proteins' structure relates to its function. However, in this case the disclosure is limited to the nucleotide and encoded amino acid sequence of human protein kinase of SEQ ID NO: 2.

While recombinant and mutagenesis techniques are known, it is not routine in the art to screen for multiple substitutions or multiple modifications, as encompassed by the instant claims, and the positions within a protein's sequence where amino acid modifications can be made with a reasonable expectation of success in obtaining the desired activity/utility are limited in any protein and the result of such modifications is unpredictable. In addition, one skilled in the art would expect any tolerance to modification for a given protein to diminish with each further and additional modification, e.g. multiple substitutions.

The specification does not support the broad scope of the claims which encompass a 5% modifications of the human protein kinase of SEQ ID NOS: 2, or wherein the isolated polypeptide comprises a fragment of SEQ ID NO: 2, or wherein the fragment is at least 500 consecutive amino acids residues of SEQ ID NO: 2; or wherein the polypeptide comprises a variant of a fragment of SEQ ID NO: 2; or wherein the variant and said fragment have at least 95% identity [to the amino acid sequence of SEQ ID NO: 2].

because the specification does **not** establish: (A) regions of the protein structure which may be modified without effecting human protein kinase activity; (B) the general tolerance of human protein kinase to modification and extent of such tolerance; (C) a rational and predictable scheme for modifying any human protein kinase residues with an expectation of obtaining the desired biological function; and (D) the specification provides insufficient guidance as to which of the essentially infinite possible choices is likely to be successful.

Thus, applicants have not provided sufficient guidance to enable one of ordinary skill in the art to make and use the claimed invention in a manner reasonably correlated with the scope of the claims. The scope of the claims must bear a reasonable correlation with the scope of enablement (In re Fisher, 166 USPQ 19 24 (CCPA 1970)). Without sufficient guidance, determination of randomly modified polypeptide of SEQ ID NO: 2 for having the desired biological or human protein kinase characteristics is unpredictable and the experimentation left to those skilled in the art is unnecessarily, and improperly, extensive and undue in using the modified enzyme in the method claimed. See In re Wands 858 F.2d 731, 8 USPQ2nd 1400 (Fed. Cir, 1988).

22. *Claim Rejections - 35 USC § 112* (second paragraph)

Claim 11 is rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 11, lines 1-2, recite ‘ wherein the variant and the said fragment have at least 95% identity.’

The claim is indefinite because it is not clear ‘ what the 95% identity’ refers to. Amending the claim to add the reference sequence of SEQ ID NO: 2, will overcome this rejection.

23. Claim 9 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

24. The following references have been cited for information, but have not been used in any rejection(s).

(1). US 6,759,222 B2 (MEYERS et al.) 06 July 2004 (06.07.2004), see the entire document. Applicants' SEQ ID NO: 1 (DNA) is 72.9% identical to SEQ ID NO: 1 of the US Patent, and the two sequences have 2999 nucleotide matches between them. Applicants SEQ ID NO: 2 is 86.6% identical to SEQ ID NO: 2 of the US Patent, and the two sequences have 906 amino acids matches between them [sequence alignments are attached to the copy of the patent]. Contiguous 500 matches are not taught by this reference.

(2). WO 01166594 (SUGEN, INC. (US)) Plowman et al., 13 September 2001 (13.09.2001), see the entire document. Applicants' SEQ ID NO: 1 (DNA) is 63.1% identical to Accession No. AX250157 of the WO Patent, and the two sequences have 2363 nucleotide matches between them. Applicants SEQ ID NO: 2 is 79.6% identical to Accession No. AAG67391 (protein) of the WO Patent, and the two sequences have 827 amino acids matches between them [sequence alignments are attached to the copy of the patent]. Contiguous 500 matches are not taught by this reference.

Both the references have been cited PTO 1449.

25 No claim is allowed.

26. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tekchand Saidha whose telephone number is (571) 272 0940. The examiner can normally be reached on 8.30 am - 5.00 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner' s supervisor, Ponnathapu Achutamurthy can be reached on (571) 272 0928. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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